CIRM Shared Research Laboratory Information Form – Part Two

Section A. Project Information

Project Title	COLLABORATIVE LABORATORY AND TRAINING COURSE FOR HUMAN EMBRYONIC STEM CELL RESEARCH AT BURNHAM INSTITUTE FOR MEDICAL RESEARCH

Limited to 300 Characters

Project Start Date	May 1, 2007	Construction Start Date	Sep 1, 2007	Occupancy Date	Jan 15, 2008

Total Part Two Funds Requested for Shared Laboratory Space	$2,289,093
Total Part Two Funds Requested for Stem Cell Techniques Course	$ 620,289
Total Capital Funds Requested	$ 810,500

Note: All green fields are calculated values. Do not enter a value in the field.

Please indicate whether you propose to apply for funding of a Stem Cell Techniques Course along with the Shared Laboratory Space, or just the Shared Laboratory Space.

◯ Shared Research Laboratory only ◉ Shared Research Laboratory and Stem Cell Techniques Course

NOTE: Please be aware that any information you provide in this form will be made publically available.

Section A. 1. Program Director

Name	Prefix	First	Middle	Last	Suffix
	Dr.	Jeanne	F.	Loring	

Email (office)	jloring@burnham.org	This email address identifies you to CIRM. Please use this email address for all correspondence with CIRM.
Application Number	CL1-00511-1	This field should fill automatically, based on the email address. If not, enter the number you received via email from CIRM, in the form "XX9-99999-9", where "X" is a letter, and "9" is a digit.

Section A. 2. Facilities Contact

Name	Prefix	First	Middle	Last	Suffix
	Mr.	David		Hassell	

Institution	Burnham Institute for Medical Research	If your institution is not listed, please identify the name of the institution here.
Other Institution		
Position Title	Director of Facilities	
Department	Facilities	
Address	10901 North Torrey Pines Road	

City	La Jolla			CA	Zip Code 92037
Phone Number	(858) 646-3151	Ext		Fax Number	(858) 646-3193

Email (office)	dhassell@burnham.org	This email address identifies you to CIRM. Please use this email address for all correspondence with CIRM.

(Revised 03/07/2007)

Section A. 3. Public Abstract

See Appendix A.

Section A. 4. Statement of Benefit to California

See Appendix A.

CIRM Shared Research Laboratory Information Form – Part Two

Section B. Laboratory Renovation Plan

Project Manager	David Hassell		Construction Supervisor	David Hassell
Title	Director of Facilities		Title	Director of Facilities
Company/Institution	Burnham Institute of Medical Research		Company/Institution	Burnham Institute of Medical Resear

Describe plans for development/renovation of the shared laboratory space including fixed equipment costs. Include a description of the current space and how it will be renovated and reconfigured to form the laboratory. Include as attachments one 11x17 page of the current floor plan space and one 11x17 page of proposed floor plan of the renovated space. Describe all renovations that will be done. Describe how the project will be managed and tracked, as well as how change orders will be handled. For laboratories that are proposed to be located in leased space, provide information regarding the institution's long-term access to the leased space. Describe plans and schedule for all phases of development including design, construction, and installation of equipment leading to a functional laboratory. Give a proposed contingency plan in case of cost overruns. Any additional costs due to budget overruns will be the responsibility of the grant recipient. (narrative limited to 3 pages)

OVERALL PLAN AND JUSTIFICATION

BIMR currently operates approximately 1000 sq.ft. of laboratory space dedicated to human embryonic stem cell (hESC) research with non-approved cell lines. This space was renovated to its current configuration in 2004 using philanthropic (non-federal) funds. It serves the dual purposes of a shared lab resource for investigators wishing to generate and study hESCs and as a venue for periodic stem cell training courses.

We propose to upgrade this existing space as the Training Laboratory, and to renovate and equip an adjacent 2300 sq. ft. of laboratory space to produce a Shared Laboratory. This approximately 3300 sq.ft. of space will provide significantly increased capacity for hESC research and training, as necessitated by BIMR's success in obtaining CIRM SEED and Comprehensive grants. Based on the total number of CIRM grants submitted, indicative of the growing commitment of our scientists to pursue issues in stem cell biology, the number of BIMR laboratories engaged in some aspect of hESC research has increased by 67% to 30; requiring us to accommodate nearly 100 part-time and full-time researchers. It is expected that BIMR scientists will continue to compete successfully for CIRM grants as they accumulate more preliminary data. We also provide training and space as well as intellectual and material resources for a number of the other smaller research institutions on the La Jolla Mesa that do not have their own hESC capabilities. This expansion project will provide sufficient lab space to meet these growing needs. In addition, this expanded laboratory space will accommodate a growing schedule of training courses in various aspects of hESC biology.

The Shared Laboratory space will consist of a Main Laboratory and Training Laboratory, walls will be reconstructed and equipment located to minimize traffic in areas where tissue culture work is performed. Lab benches and work tables will be installed to optimize (i) tissue culture activities, (ii) training activities, and (iii) common equipment usage.

The attached 11x17 floor plans depicts the Main Laboratory, which will be constructed as an open laboratory space, combining two existing rooms by opening up doorways in the existing non-bearing walls that currently divide these spaces. Current occupants of these rooms will be relocated to make room for the expanded stem cell lab. Existing fume hoods will remain in place, but laboratory benches will be reconfigured to accommodate the specialized needs and equipment for stem cell research. The present laboratory space is accessible only by a keycard issued to approved users. Additional entrances to the enlarged facility will be similarly monitored. In addition, the equipment room housing Center stocks of cells and reagents will be key-card restricted to only supervisory personnel. The freezers will similarly be locked and accessible only with a proper key.

DETAILED RENOVATION PLAN
The renovation will be carried out in the following phases:
(1) PRELIMINARY DESIGN:
In conjunction with the architect (hired based on competitive bid and interview), develop floor plan layout, including location of walls, doors, and major utilities.

(2) BID SOLICITATION:
Having already performed a preliminary in-host cost-estimate, work with third party cost-estimator to establish precise project scope and cost in order to prepare bids for general contractor selection.

Section B -- 1. Laboratory Renovation Plan (continued)

(3) SCHEMATIC DESIGN & DEMOLITION:
Develop layout of fixed equipment, lab benches and basic utilities; identify elements requiring demolition (done in collaboration with contractor).

(4) DETAILED DESIGN:
Identify utility points-of-use connections for all equipment and final finishes.

(5) START CONSTRUCTION:
(a) Move present occupants, equipment, and set up temporary construction barriers
(b) Safe-off utilities
(c) Demolition plan: rough-in new openings; remove flooring, insulation, T-bars, lights, utility/facility fixed fixtures (including benches) as needed.
(d) Install new utility/facility fixed fixtures, e.g., HVAC, electrical, plumbing, benches (14-18 ft with 3-knee holes and 2 flanking desks); head-in all new openings; hang new dry-wall as per plan.
(e) Finishes and initiate punch-list, coordinate with sub-contractors to complete project for final inspection.

(6) COMPLETE CONSTRUCTION:
(a) Punch-list finalized
(b) Permit process signed off (including all user's future needs)

The research areas that comprise the new stem cell facility will be worked on individually and sequentially in order to minimize disruption to current lab occupants. This phasing of renovation is routinely done at BIMR and will have minimal impact on the overall timing of completion of the project. As indicated in the attached floor-plan, the configuration of the BIMR buildings, including Building 7 which houses the present Stem Cell Research Center, allows for ready elimination of the present walls dividing modules and a reconfiguring of hoods, benches, water, gas, and drainage.

In addition to the Main Laboratory area, a portion of renovation funds will be devoted to expanding the present vivarium facilities by 770 sq. ft. to provide dedicated space for stem cell-related projects, particularly those involving non-federally-approved lines (see attached 11x17 floor plan). Steps in renovating this space will follow precisely the sequence outlined above.

PROJECT MANAGEMENT AND ADHERENCE TO BUDGET
This is a relatively small-scale construction project for BIMR, and the likelihood of a cost overrun is low. The construction contract will be put out for a competitive hard-bid, so the contractor will be obligated to cover any overruns not caused by BIMR. Any additional costs that exceed the original construction budget will be permitted only upon approval of a change order. Every change order, whether or not it results in additional costs, will be managed and tracked by the Construction Supervisor (David Hassell) and will require the approval of the Project Managers (also David Hassell) and Program Director (Jeanne Loring) and co-Director (Evan Snyder) in collaboration with the Oversight Committee. Costs exceeding the original construction budget will be covered by value engineering and the construction contingency (equal to 10% of the construction budget).

Section B. 1. Schedule/Timeline and Drawdown of Funds Table

Provide a realistic schedule and drawdown of funds for completing each activity/milestone, as indicated below.

#	Activity/Milestone	Start Date	Completion or Milestone Date	Amount of CIRM funds to be drawn
1	Grant Award (estimate)		May 1, 2007	
2	Request for Planning Funds (10% of Construction Costs)		May 2, 2007	$ 64,050
3	Prepare Preliminary Plans	May 15, 2007	Jun 30, 2007	
4	Approval of PPs		Jul 15, 2007	
5	Prepare Working Drawings	Jul 16, 2007	Jul 31, 2007	
6	Approval of WDs		Aug 15, 2007	
7	Request Construction Contract funds (80% of Construction Costs)		Aug 16, 2007	$512,400
8	Advertise for Construction Contract	Jul 31, 2007	Aug 15, 2007	
9	Award Construction Contract		Aug 31, 2007	
10	Construction Activities	Sep 1, 2007	Dec 31, 2007	
11	Completion of Equipment Purchases		Oct 1, 2007	
12	Request Equipment Purchase funds		Oct 2, 2007	$999,775
13	Beneficial Occupancy		Jan 16, 2008	
14	Notice of Completion		Jan 15, 2008	
15	Request Construction Completion Amount (10% of Construction Funding)		Jan 17, 2008	$ 64,050

"Preliminary Plans" (PPs) represent approximately 35 percent of the design effort, or may be considered the product of completing the "Design Development" (DDs) phase of architectural work.

"Working Drawings" (WDs) represent drawings and specifications from which a contractor may determine the full extent of work contemplated in the project for purposes of submitting a bid; may be referred to as completion of "Construction Documents" (CDs) phase of architectural work.

Section B. 2. Budget

Provide a complete budget for the renovation that includes construction costs, design fees, administration of the project, other costs (i.e. installation of equipment) and a construction contingency (limited to 7-10% of the construction budget). Identify the amount of CIRM funds requested and the matching funds (construction requires 20% matching funds). Provide a complete budget for movable equipment (equipment requires 20% matching funds). (narrative limited to 3 pages)

(Note: An Excel spreadsheet can be attached as long as the total submission for this Section is limited to 3 pages)

SPACE PLAN:
Funds requested to renovate space is $640,500 in CIRM grant funds, which will be supplemented by $170,000 in BIMR matching funds for a total of $810,500. The breakdown into budget categories is shown in Section B.3, Budget Summary Table.

JUSTIFICATION:
BIMR currently has 18 PIs using our approximately 1000 sq.ft. "Safe Haven" for non-NIH approved hESC research, and we are over-crowded. These investigators are supported primarily by NIH or private funds. With the awarding to BIMR of eight CIRM SEED Grants, several Comprehensive Grants, and the likely addition of further CIRM funding, we estimate that at least another 12 BIMR PIs will require space within the next year, for a total of nearly 100 users.

To meet the expected increase in demand, we propose to expand our hESC facilities to approximately 4000 sq ft of research and support space, including a Main Laboratory, a dual-use Training Laboratory, a shared Equipment Room, a vivarium expansion and upgrades to Shared Resource Facilities. The Main Laboratory, consisting of 2300 sq. ft. will have an open plan with modular research areas to maximize use of the space and meet the changing needs of individual researchers. We propose renovating the Main Laboratory to accommodate tissue culture and hESC characterization equipment used by laboratory support staff and active stem cell investigators. Some lab benches (15 ft in length, each with 3 knee-holes and desks at each end) will be assigned to two or three CIRM researchers whose projects demand extensive use of cultured cells. Other bench space will be designated as shared use areas for commonly used techniques such as immunocytochemistry. Investigators who need the space short-term or intermittently will be allocated smaller bench areas which will be shared with other similar projects. Use of space will be apportioned based on the overhead derived from each project. The Oversight Committee will advise the Director in appropriate allocation of space.
An additional 1,000 sq.ft. of Training Laboratory space will be designated for Techniques Courses. In the intervals between Courses, the Training Laboratory space and equipment will be used for overflow for the research investigators. Equipment for the Training Laboratory is requested in the accompanying application.

An existing shared Equipment Room will be renovated to accommodate hESC-specific equipment; it will be restricted to lab staff (by keycard), and will house our bank of stem cell lines, stocks of validated reagents, and molecular analysis equipment that requires advanced training. Finally, two of our existing shared resource facilities, Gene Analysis and Cell Imaging, will be moderately renovated to accommodate additional specialized equipment supporting BIMR's hESC research programs. The total budgeted remodeling cost for the research and training laboratory space is $480,500.

In addition to renovation of the research and training laboratory space, we propose expansion of our present vivarium facilities to allow CIRM-funded investigators to perform their proposed research using animal models of human disease and testing for stem cell tumorigenicity. A critical assay for hESC pluripotence, teratoma formation, also requires dedicated space for mouse studies. Funds are requested for expanding the present vivarium by approximately 770 sq. ft. This space will house 12 double-sided racks that will hold 1728 cages, providing dedicated space for stem cell-related projects, particularly those involving non-federally-approved lines (see attached 11x17 floor plan). This portion of the renovation is estimated to cost $160,000. As part of the matching funds, the $254,000 required for ventilated racks, cages, and other equipment to furnish the facility will be provided by BIMR.

Construction Cost Estimates: Over the past four years, BIMR has supervised interior renovations of labs and offices within existing buildings on the 6 acre campus at a total cost of $2.5 million. In-house cost estimates are based on those previous tenant improvements. Typical construction cost estimates were used, including areas such as MEP and facility finishes. The preliminary budget estimates were then evaluated by contractors typically used for campus remodeling process.

EQUIPMENT PLAN:
Funds requested for movable equipment are $999,905 in CIRM grant funds, which will be supplemented by $254,000 in BIMR matching funds for a total of $1,253,905. A detailed breakdown of the number and types of equipment is provided on the attached spreadsheet entitled Shared Laboratory Equipment.

Section B. 2. Budget (continued)

JUSTIFICATION:
Cell culture and characterization are critical components of hESC research. Each of the research modules in the main laboratory will accommodate 12 to 15 researchers, with 3 biosafety hoods, 3 double CO2 incubators, an inverted phase contrast microscope with camera, a dissecting microscope in a laminar flow hood, and a thermocycler. The Main Laboratory will also have additional equipment for research: two fluorescence microscopes, a controlled-rate freezer for hESC cryopreservation, an electroporator for cell transfection, a separate low oxygen incubator for derivation and maintenance of hESC lines, a flow cytometer for quantifying cell types, and a multi-electrode array apparatus for functional electrophysiological analysis of hESC derivatives such as neurons and cardiac myocytes. The secure adjacent equipment room will house a liquid nitrogen freezer for the stem cell bank, a -80 C freezer, and a NanoDrop spectrophotometer for screening samples submitted for RNA and DNA analysis. As described above, additional research space and equipment will also often be available in the Training Laboratory, where short-term projects can be performed between courses.

In addition, a portion of requested funds will be used to augment the BIMR Shared Resource facilities, leveraging CIRM funds by the substantial infrastructure investment already made in our core resources. BIMR Shared Resources offer state-of-the-art services, including structural biology, genomics, cell analysis, functional genomics, proteomics, and chemical library screening funded by NIH grants totaling over $40MM. Additional equipment is needed for hESC-related research, and we propose to add: (1) SNP genotyping and DNA methylation analysis capabilities to our existing Illumina BeadStation, and to purchase an ABI 7900 quantitative PCR instrument with TLDA microfluidics capability for quantitative analysis of mRNA and microRNAs in our Gene Analysis Core; (2) a high-throughput electroporator (Amaxa-96 well) for genetic manipulation of hESC for high-throughput applications in our Functional Genomics Core; (3) a Delta Vision deconvolution microscope to improve live cell imaging capability in our Cell Imaging core, which lacks deconvolution capability currently; and (4) an Isocyte laser scanning fluorimeter to improve our high-throughput image analysis capabilities for differentiation and other screens in our Functional Genomics and Screening Cores.

Section B. 3. Budget Summary Table

Complete the budget summary for the use of CIRM funds.
Note: All colored fields contain calculated data. Please do not enter anything in those fields.

Other Project Costs				
Budget Category		**Total Budget**	**CIRM Grant Funds**	**Institutional Match**
Construction Contract Costs		$ 478,625	$ 375,000	$ 103,625
Other Construction Costs (institutional)		$ 187,500	$ 150,000	$ 37,500
Subtotal Construction		$ 666,125	$ 525,000	$ 141,125
Design Fees		$ 65,625	$ 52,500	$ 13,125
Administrative Costs		$ 13,125	$ 10,500	$ 2,625
Construction Contingency		$ 65,625	$ 52,500	$ 13,125
Total Construction		$ 810,500	$ 640,500	$ 170,000
Movable Equipment		$1,478,593	$ 999,775	$ 478,818
Total Budget		$2,289,093	$1,640,275	$ 648,818
Gross Square Feet	6000	$ 135.08	$ 106.75	Const Costs/GSF
Assignable Square Feet	4000	$ 202.63	$ 160.13	Const Costs/ASF

Section B. 4. Institutional Commitment

Provide a detailed description of the amount and source of matching funding for each request that requires matching funds. The requirement of matching funds can be satisfied if the institution can document funds, excluding other grant funds, committed to similar projects (i.e., renovation of lab space and equipment purchase) after January 1, 2005. Detail the use of the space after the three year period is completed. (narrative limited to 2 pages)

The Burnham Institute for Medical Research has a mission to perform outstanding basic research in the life sciences that provides the foundation for medical progress. The Burnham Institute for Medical Research is at the forefront of the CIRM-sponsored initiatives that have the ambitious goal of taking advantage of stem cell research to combat human disease. This requires not only rigorous experimentation but also the appropriate research tools, equipment and facilities. The Burnham Institute for Medical Research is extremely supportive of the proposed Part 2 of the CIRM Shared Research Laboratory and Stem Cell Techniques Courses proposal.

The Institute has or will provide (after January 2005), non-Federal equipment purchase and maintenance funds in the total amount of $772,876, as detailed below.

The Institute has made substantial institutional commitments toward maintaining the Stem Cell Facility that supports world-class science. This Facility has acquired a wealth of experience and provided training in human embryonic stem cell research during its three years of operation. In addition, the Institute provides an outstanding scientific infrastructure outside of the Stem Cell Facility, with established Shared Resources built up over the last 25 years providing advanced technical support in multiple areas of biomolecular science. Nearly all (>95%) of the advanced equipment and services in the Shared Resources are accessible to stem cell investigators. For an overview of the existing BIMR core labs, please see http://www.burnham.org/default.asp?contentID=153

Long-term commitment (following three years) will follow the same general structure, with the Institute guaranteeing at least all costs associated with service and maintenance contracts for the equipment. BIMR anticipates that this space will be used for stem cell research after the three-year period is completed, and we have an additional commitment to advancing knowledge about stem cells through our world-wide network of scientific collaborations.

Description of the amount of equipment matching funds:

An Olympus 1X71 inverted microscope and imaging system for the safe haven stem cell laboratory: $48,076. Purchased in June, 2005.

Electrophysiology Multiple Electrode Array system (MEA system): approximately $125,000. Purchased in 2006. The purpose of this system is to monitor function and integration of nerve cells derived from stem cells. Funds are requested in this proposal to now further expand MEA capacity.

Illumina Microarray System: $160,800. Purchased in 2006.
This instrument is used for gene expression analysis of undifferentiated and differentiated stem cells. Extensive initial characterization of stem cell gene expression has already taken place, and funds are requested in this proposal to expand the capabilities of this proven system.

For large equipment maintenance, service contracts typically cost 10% per year of their purchase price ($546K proposed in Shared Resources), and small equipment is repaired as needed, at 3% of purchase price per year ($454K proposed here). Because the first of three years is covered by warranty, two years of service contracts and repairs will be needed.

Projected cost for the Main Laboratory equipment maintenance:
$54,600 / year in service contracts x 2 years = $109,200
$13,600 / year in repairs x 2 years = 27,200
Total Equipment maintenance, Main Laboratory = $136,400

Projected cost for the Teaching lab equipment maintenance:
$17000 / year in service contracts x 2 years = $34,000
$7300 / year in repairs x 2 years = $14,600
Total Equipment maintenance in training lab = $48,600

Section B. 4. Institutional Commitment (continued)

Proposed new Animal Facility equipment: The total quoted cost of the twelve LabProducts ventilated racks with cages, along with a biosafety hood for the essential animal facility expansion is $254,000.

Overall, the total amount of matching funds spent after January 2005 or committed to support the proposed expansion of capabilities is $772,876.

Section C. Stem Cell Techniques Course (if applicable)

Based on the information provided in Part One of the application describing the course, include a justification of the additional space required and additional equipment requested, if any. Include additional square footage and provide as an attachment one 11x17 page of the proposed floor plan of the renovated space. (narrative limited to 1 page)

SAN DIEGO CONSORTIUM FOR REGENERATIVE MEDICINE: STEM CELL TRAINING COURSE

We propose to offer a series of intensive human Stem Cell Techniques Courses in conjunction with the Shared Stem Cell Research Center at BIMR. The courses will provide basic and advanced training in human ES cell (hESC) methods. We will base the curriculum on the popular NIH-sponsored hESC training courses that we have offered at BIMR and the Children's Hospital of Orange County (CHOC) since 2004, but will emphasize using cell lines and techniques that are ineligible for NIH funding. BIMR will provide the training program for the four-institution San Diego Consortium for Regenerative Medicine (SDCRM), comprised of Scripps, Salk, UCSD, and BIMR.

COURSE MANAGEMENT
We plan two levels of scientific training: a Basic Course that will be held four times the first year and three times in the following years, and an Advanced Methods Course that will be offered once in the first year and twice in years two and three. In addition, a special one-day Public Education Program twice a year will be open to educated non-biologists who wish to learn basic principles.

INTEGRATION WITH THE SHARED LABORATORY: JUSTIFICATION OF ADDITIONAL SPACE AND EQUIPMENT

The scientific courses will be held in the Training Laboratory adjacent to the Shared Laboratory. Plans for renovation of these facilities will be concurrent with and are included in the plans for the Shared Laboratory (See 11 x 17 plan). The Stem Cell Techniques Courses will consist of an intensive hands-on laboratory experience and daily discussions and seminars. The Director and her staff have three years of experience running one of the five NIH-sponsored Human Embryonic Stem Cell Training courses. Based on this experience we plan to dedicate approximately 1000 square feet of laboratory space for hESC techniques training, and to upgrade two meeting rooms (a conference room and BIMR's Fishman Auditorium) with video conferencing capabilities so that we can extend the learning experience to include outside experts. The video conferencing capabilities will allow us to invite prominent researchers to give video seminars, including those who have been traveling to our NIH courses to serve as faculty (such as Ian Wilmut, Theo Palmer, Jim Battey, and Ian Duncan). The video conferencing capability will also aid in our mission to educate non-scientists, by enabling public lectures and conferences in our facilities.
Our Training Laboratory will be equipped to train Basic Courses of up to fifteen students in the critical components of hESC research, cell culture and characterization. The laboratory space will contain three biosafety hoods, three double CO2 incubators, three inverted phase contrast microscope with cameras, three dissecting microscopes in laminar flow hoods, and three thermocyclers. Additional equipment for specialized Advanced Courses will be available through our Shared Resources and Shared Stem Cell Laboratory.

In addition to the microscopes used by the students, we will have a fluorescence inverted microscope set up for the instructors to use in demonstrating techniques and training students to recognize characteristics of cultures and specimens. This Video Demonstration microscope system will allow images to be presented on a large computer screen for the students to experience the expertise of the instructors in tutorial sessions.

Limit narrative to visible field area.

Section C. 1. Schedule and Drawdown of Funds Table (if applicable)

Provide a realistic schedule and drawdown of funds for completing each activity/milestone, as indicated below.

#	Activity/Milestone	Start Date	Completion or Milestone Date	Amount of CIRM funds to be drawn
1	Grant Award (estimate)		May 1, 2007	
2	Request for Planning Funds (10% of Construction Costs)		May 2, 2007	$ 000
3	Prepare Preliminary Plans	May 15, 2007	Jun 30, 2007	
4	Approval of PPs		Jul 15, 2007	
5	Prepare Working Drawings	Jul 16, 2007	Jul 31, 2007	
6	Approval of WDs		Aug 15, 2007	
7	Request Construction Contract funds (80% of Construction Costs)		Aug 16, 2007	$ 000
8	Advertise for Construction Contract	Jul 31, 2007	Aug 15, 2007	
9	Award Construction Contract		Aug 31, 2007	
10	Construction Activities	Sep 1, 2007	Dec 31, 2007	
11	Completion of Additional Equipment Purchases		Oct 1, 2007	
12	Request Additional Equipment Purchase funds		Oct 2, 2007	$496,231
13	Beneficial Occupancy		Jan 16, 2008	
14	Notice of Completion		Jan 15, 2008	
15	Request Construction Completion Amount (10% of Construction Funding)		Jan 17, 2008	$ 000

"Preliminary Plans" (PPs) represent approximately 35 percent of the design effort, or may be considered the product of completing the "Design Development" (DDs) phase of architectural work.

"Working Drawings" (WDs) represent drawings and specifications from whicha contractor may determine the full extent of work contemplated in the project for purposes of submitting a bid; may be referred to as completion of "Construction Documents" (CDs) phase of architectural work.

"Additional Equipment" represents equipment to be used for the Stem Cell Techniques Course.

Section C. 2. Budget (if applicable)

Provide a complete budget for the additional renovation that includes construction costs, design fees, administration of the project, other costs (i.e. installation of equipment) and a construction contingency (limited to 7-10% of the construction budget). Identify the amount of CIRM funds requested and the matching funds (construction requires 20% matching funds). Provide a complete budget for additional movable equipment (equipment requires 20% matching funds). (narrative limited to 3 pages)

(Note: An Excel spreadsheet can be attached as long as the total submission for this Section is limited to 3 pages)

SAN DIEGO CONSORTIUM FOR REGENERATIVE MEDICINE: STEM CELL TRAINING COURSE
Additional Renovations:
Our Stem Cell Training Course laboratory space will be renovated in conjunction with the Shared Laboratory construction plan, so no additional details are provided here.

Additional Equipment:
The equipment for the Stem Cell Training Course is detailed in the Excel spreadsheet entitled "Stem Cell Techniques Course." We are requesting a total of $496,231.

LABORATORY EQUIPMENT
Our Training Laboratory will contain equipment for cell culture training of up to 15 students: three biosafety hoods, three double CO2 incubators, three inverted phase contrast microscope with cameras, and three dissecting microscopes in laminar flow hoods. Three fluorescence microscopes will be used to train the students in immunocytochemistry, a critical component of hESC characterization. We are requesting three thermocyclers to train students in basic molecular characterization of hESC. In addition to the microscopes used by the students, we will have a Video Demonstration microscope system to allow demonstrations and tutorials. We are also requesting funds for a basic Flow cytometer to train the students in quantification methods based on analysis of dissociated cells.

VIDEO CONFERENCING EQUIPMENT
In addition to the laboratory, we plan to add video conferencing capability for two conference spaces.

We anticipate that videoconferencing will be an important component of our educational program. Students will have the opportunity to take advantage of conferences throughout the State. In a complementary fashion, members of other institutions throughout the State will be able to attend monthly sessions of our Southern California Stem Cell Consortium (SCSCC), which serves as a "regional lab meeting" to encourage interaction among diverse stem cell research laboratories. Videoconferencing will also allow individual instruction and data sharing between investigators and students at the bench.

The components and expenses required for effective video conferencing are listed in detail in the associated document entitled: "Video Conferencing Equipment". Items #1-#5 are required for group-to-group meetings and includes a large screen and high definition camera. Up to four sites can be conferences at once. Items #6-#9 are for smaller groups, includes a smaller screen (size of a computer monitor) and is designed for web-meetings from a desktop and/or for close-up demonstrations to students. Items #10-#18 include necessary equipment for the infrastructure of the entire system (e.g., being able to transverse firewalls, mutli-vendor endpoints, security access, and managing time use of the system). All charges include installation, training, and maintenance.

Section C. 3. Budget Summary Table (if applicable)

Complete the budget summary for the use of CIRM funds.
Note: All colored fields contain calculated data. Please do not enter anything in those fields.

Other Project Costs				
Budget Category		**Total Budget**	**CIRM Grant Funds**	**Institutional Match**
Construction Contract Costs		$ 000	$ 000	$ 000
Other Construction Costs (institutional)		$ 000	$ 000	$ 000
Subtotal Construction		$ 000	$ 000	$ 000
Design Fees		$ 000	$ 000	$ 000
Administrative Costs		$ 000	$ 000	$ 000
Construction Contingency		$ 000	$ 000	$ 000
Total Construction		$ 000	$ 000	$ 000
Additional Movable Equipment		$ 620,289	$ 496,231	$ 124,058
Total Budget		$ 620,289	$ 496,231	$ 124,058
Gross Square Feet	0	$ 0.00	$ 0.00	Const Costs/GSF
Assignable Square Feet	0	$ 0.00	$ 0.00	Const Costs/ASF

CIRM Shared Research Laboratory Information Form – Part Two

Section D. Signature Page

Complete, save, and print Part Two of the Shared Research Laboratory Grant Information.

Submit electronic application as an email attachment to laboratory@cirm.ca.gov no later than 5:00pm PST on March 16, 2007.

Mail* the original executed Part Two application and five (5) copies to:

Shared Research Laboratory Grant Application
California Institute for Regenerative Medicine
210 King Street
San Francisco, CA 94107

***Mailing must be postmarked no later than March 16, 2007.**
Applications will not be accepted after these deadlines.

Project Start Date	May 1, 2007	Construction Start Date	Sep 1, 2007	Occupancy Date	Jan 15, 2008

Total Part Two Funds Requested for Shared Laboratory Space	$2,289,093
Total Part Two Funds Requested for Stem Cell Techniques Course	$ 620,289
Total Capital Funds Requested	$ 810,500

Facilities Contact

Mr. David Hassell
Director of Facilities
Facilities
Burnham Institute for Medical Research
10901 North Torrey Pines Road
La Jolla, CA 92037
(858) 646-3151
dhassell@burnham.org

Authorized Organizational Official	Date
Print Name	Title
Program Director	Date
Print Name	Title

(Revised 03/07/2007)

CIRM Shared Research Laboratory Information Form – Part Two Supplement

Project Information

Application Number: CL1-00511-1

Program Director Name:

Historical Performance

Provide information on past performance for 3 projects.

	Project 1	Project 2	Project 3
Brief Project Title	Vivarium Expansion	Screening Facility	NMR Facility
Original Budget (Total project cost)	$ 89,011	$ 242,378	$ 294,146
Final project cost	$ 130,247	$ 242,378	$ 294,146
Scheduled Completion Date	December 12, 2005	February 17, 2006	February 20, 2007
Actual Notice of Completion Date	December 12, 2005	February 17, 2006	February 20, 2007
Gross Square Feet involved	503	3,588	1,600
Assignable Square Feet involved	335	2,153	1,000
Approximate number of change orders	1	0	0
Value of all change orders & claims	$ 41,236	$ 000	$ 000
Type of construction management	Design-Bid-Build	Design-Bid-Build	Design-Bid-Build

Laboratory Alteration Projects

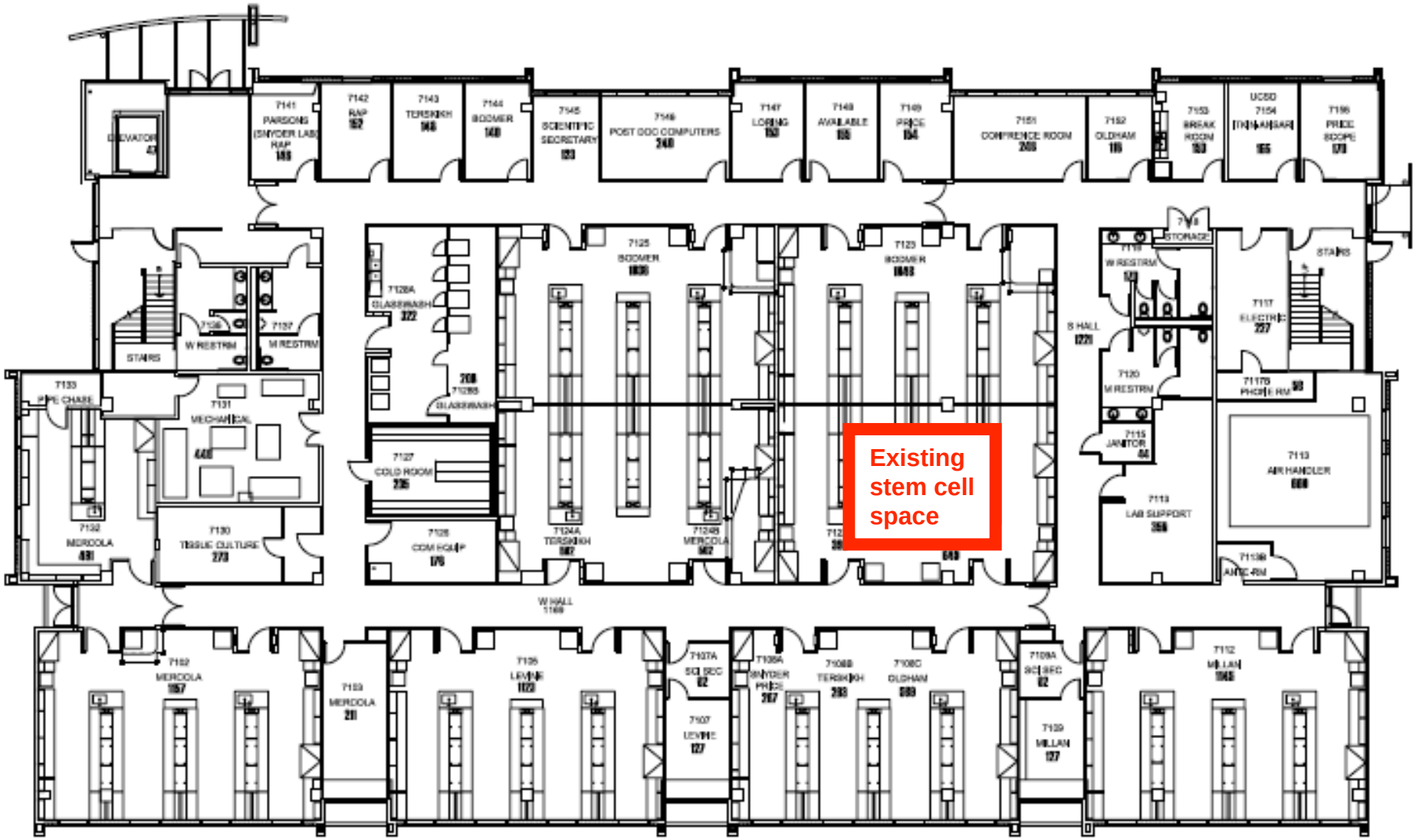
Please enter the number of laboratory alteration projects completed by the applicant in the past 2 years (in the range of $1-5 million in project cost), and the approximate total dollar value that these projects represent.

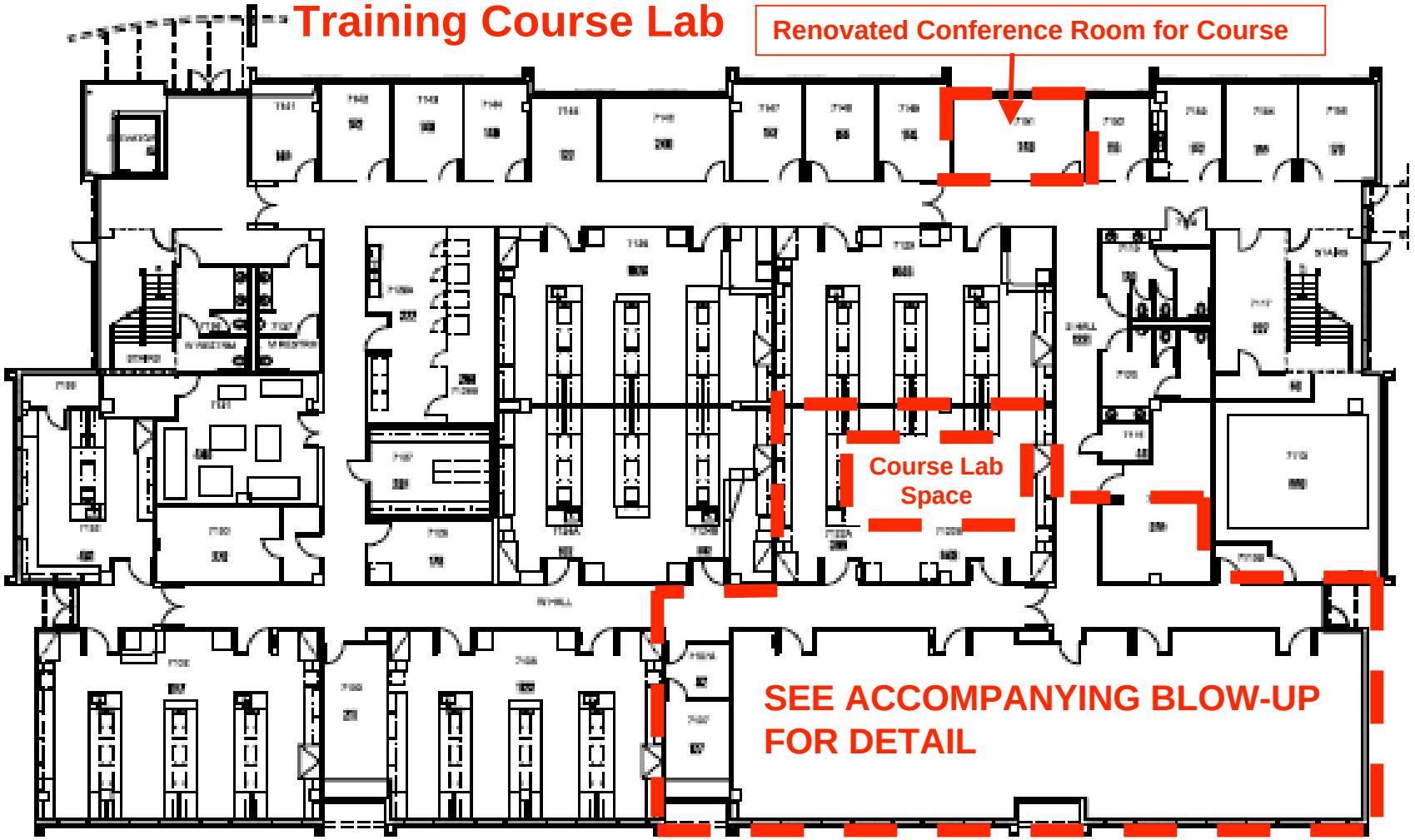
Total Laboratory Alteration Projects: 8

Approximate Total Value: $2,000,000

Limit Budget Justification to visible field area.

ORIGINAL SPACE

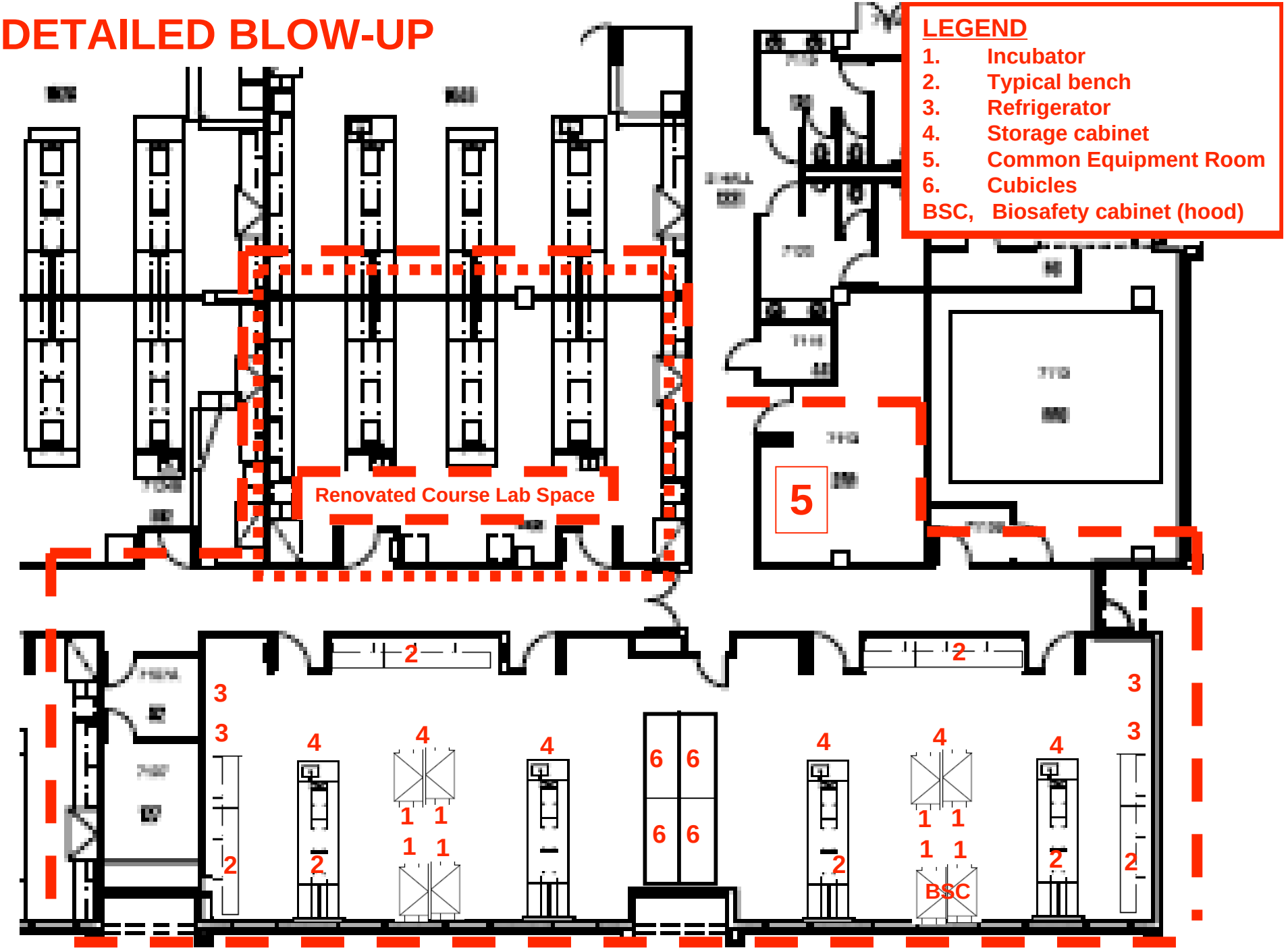




BUILDING 7 • FIRST FLOOR PLAN

BURNHAM INSTITUTE
BUILDING 7
FIRST FLOOR PLAN

DETAILED BLOW-UP



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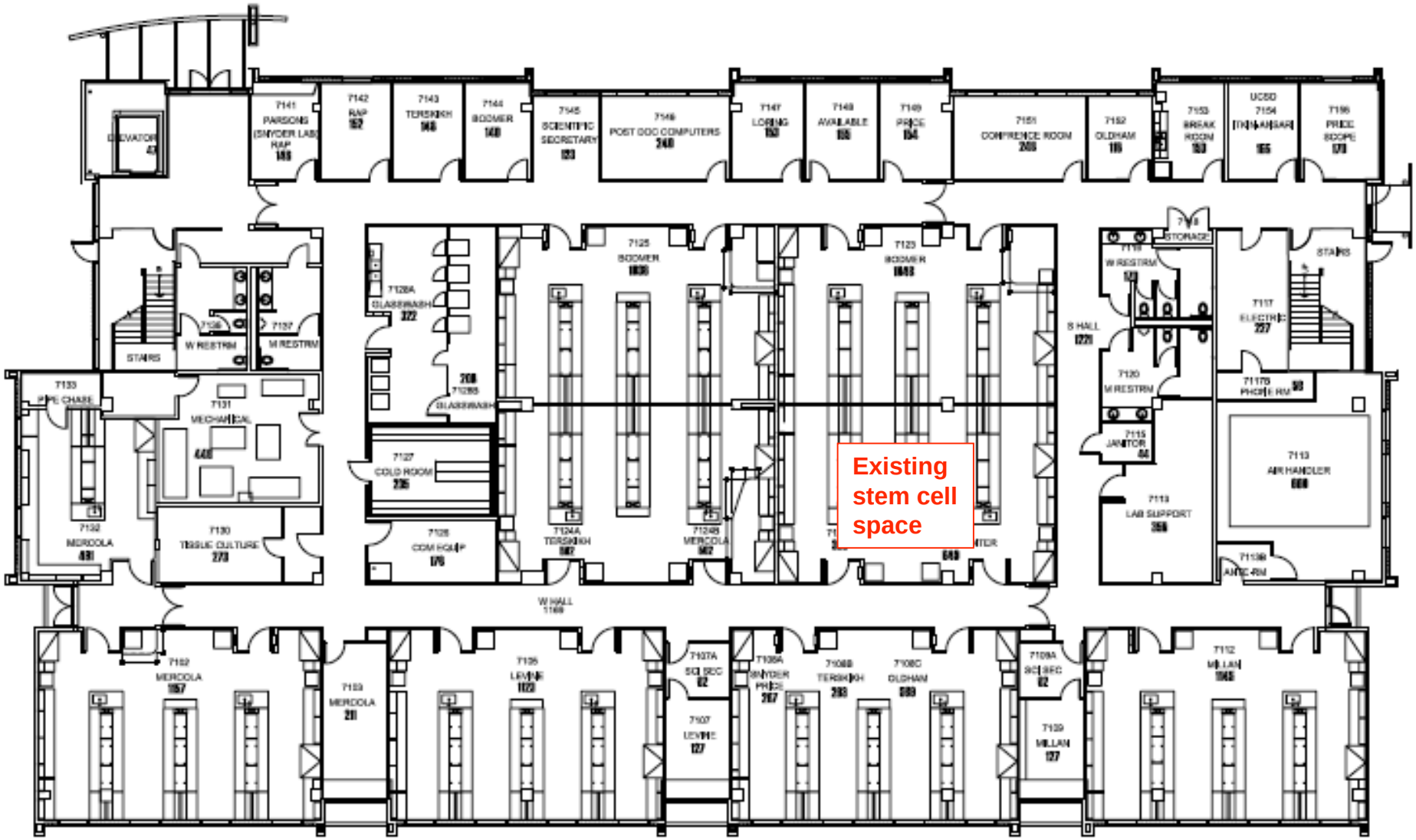

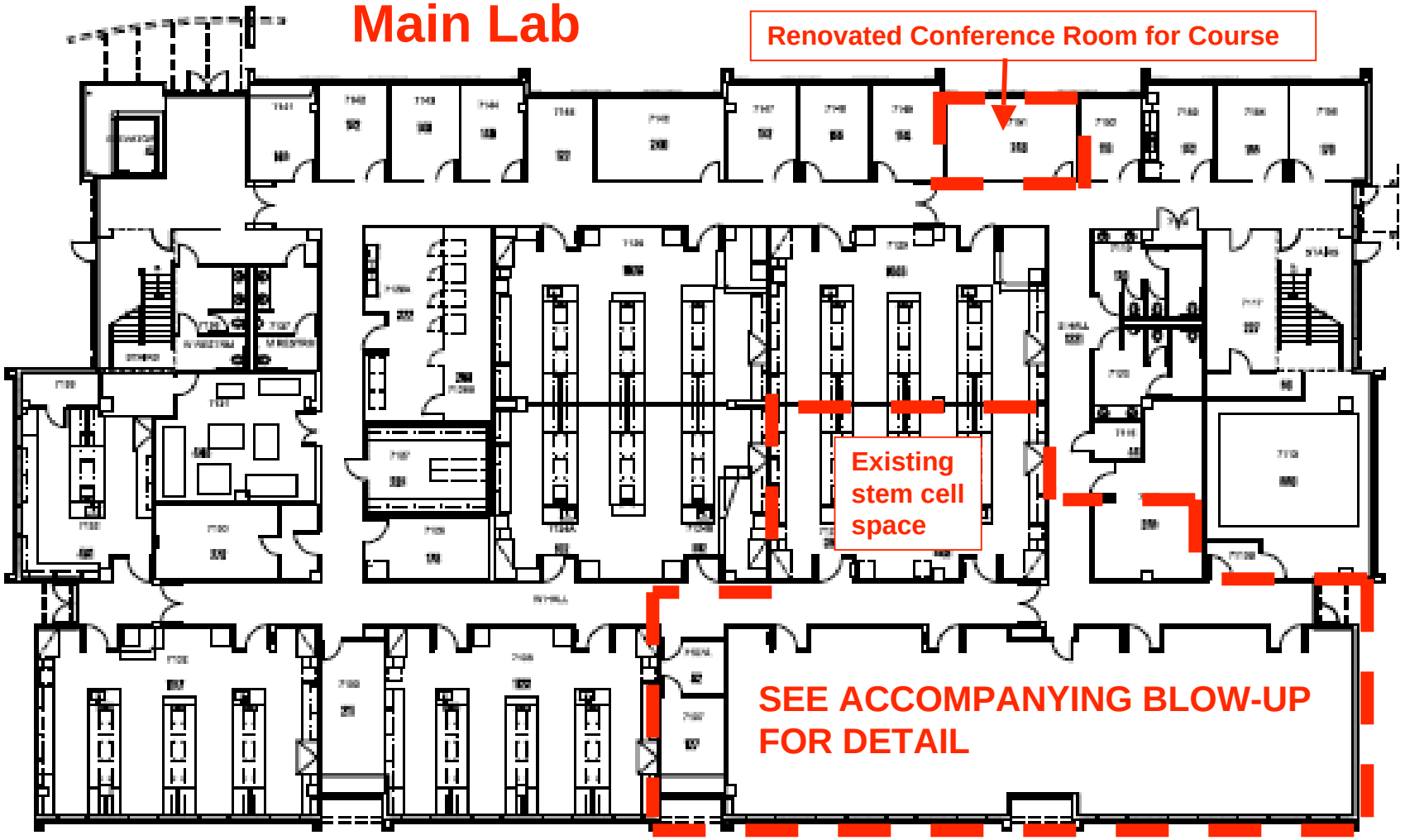

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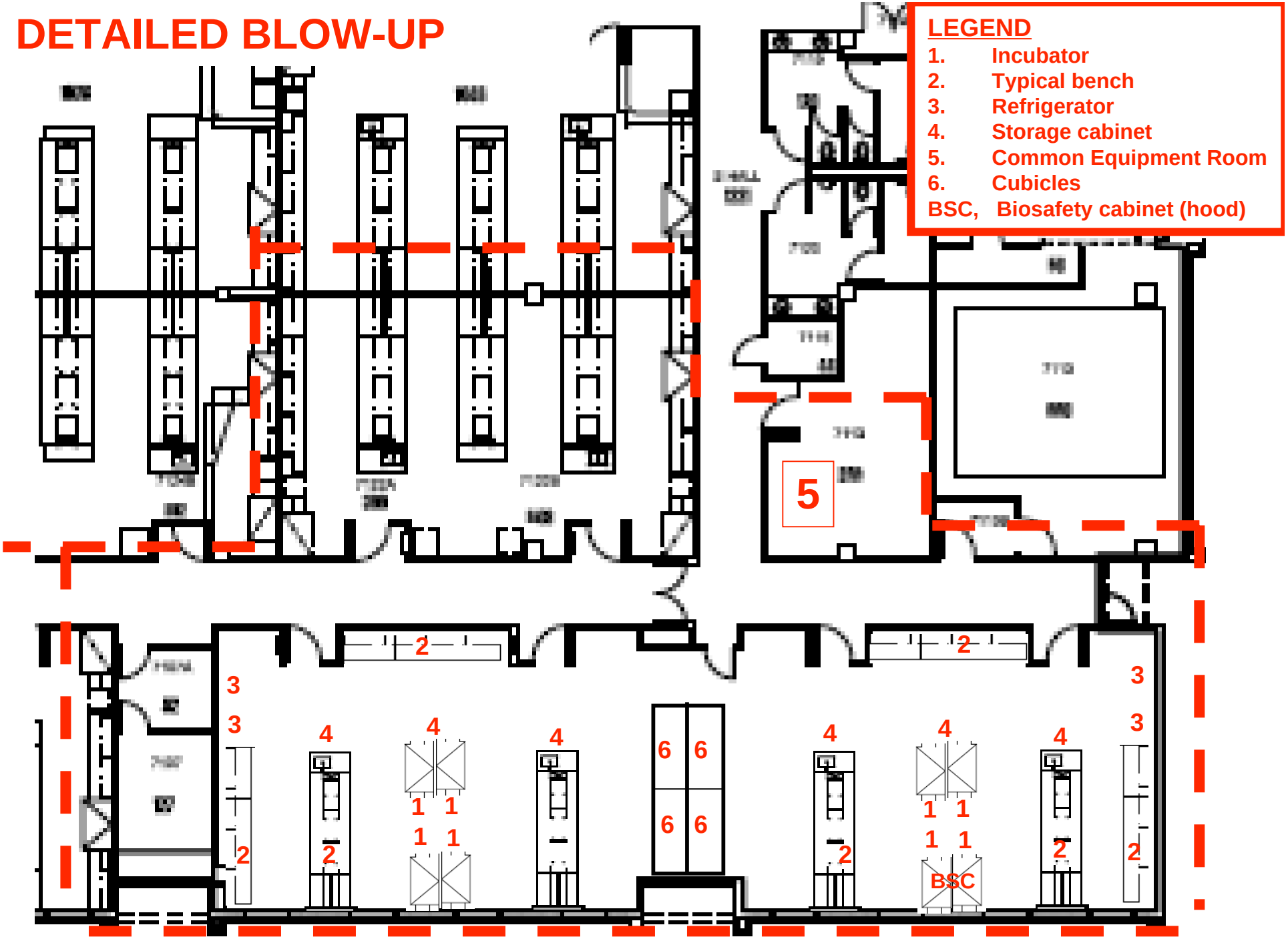
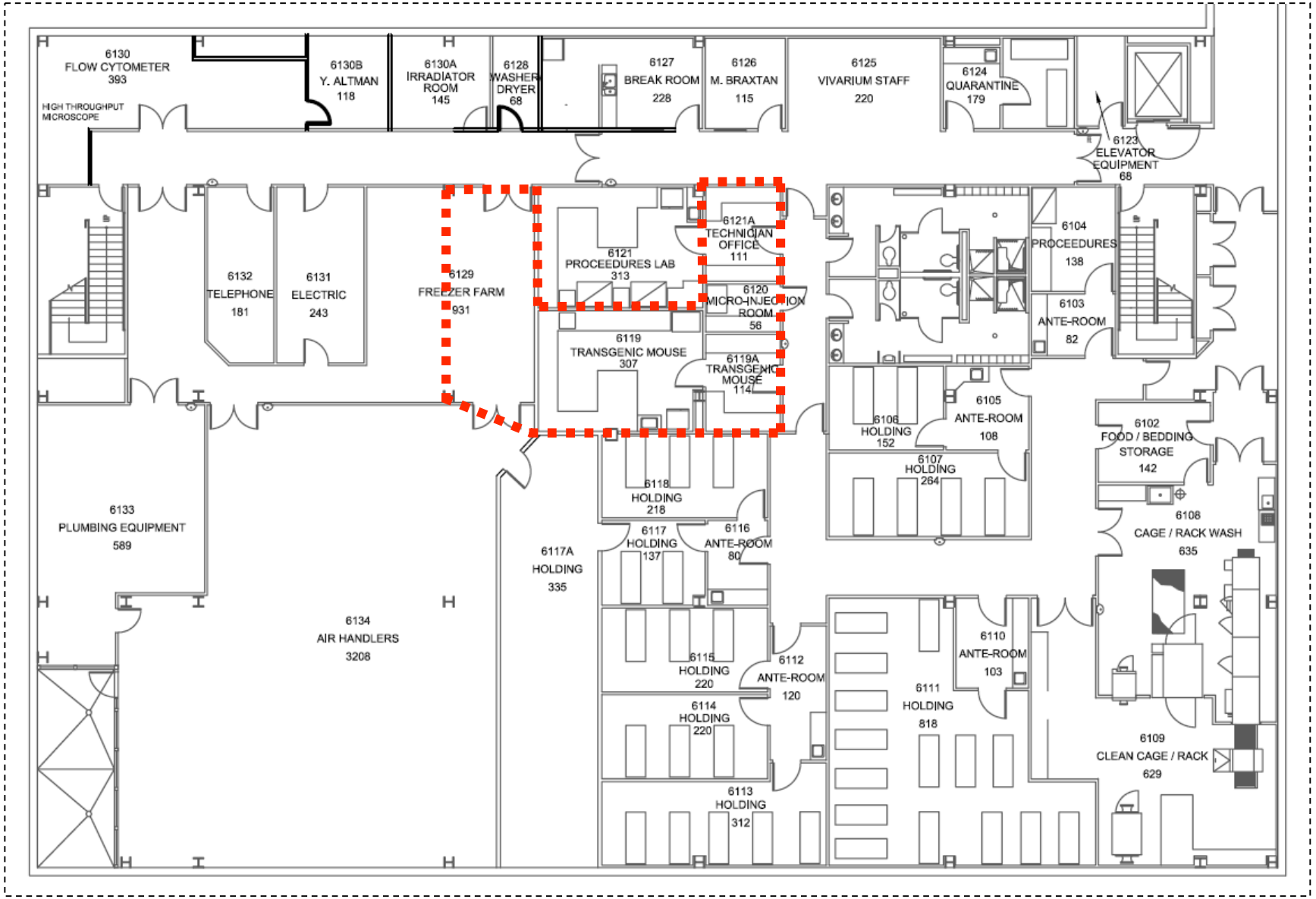
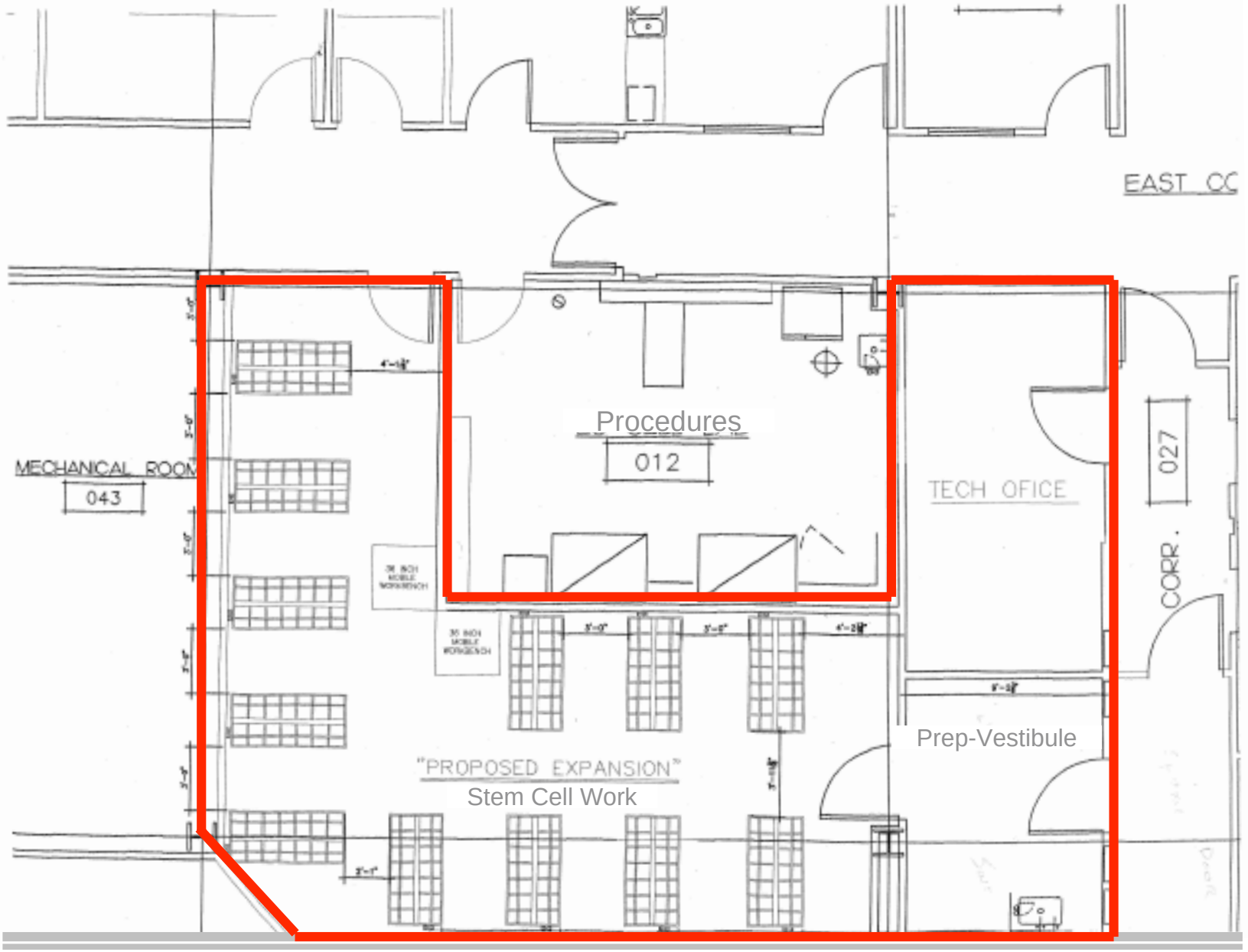


Area of Proposed Animal Facility Remodel

See attached for detail of proposed remodel (area highlighted here with dotted line)



Proposed Animal Facility Expansion Detail



SHARED LABORATORY EQUIPMENT

Capital Equipment	Qty.	Vendor	Model #	Price	Total Price	Location	
Technical Staff and Research Module							
Biosafety hood, 4 feet	3	Nu-Aire	NU-425-400	$6,540	$19,620	Main laboratory	hESC Cu
Incubator, double stack	3	Nu-Aire	NU-8700	$8,688	$26,064	Main laboratory	hESC Cu
Inverted phase contrast microscope (w/ camera system)	1	Olympus	CKX41	$9,500	$9,500	Main laboratory	Monitor/c
Dissecting microscope (w/ camera system and hood)	1	Olympus, Envirco	SZX7, LF430	$11,732	$11,732	Main laboratory	Derivatio
Fluorescence microscope (w/ camera system)	1	Olympus	IX71	$45,457	$45,457	Main laboratory	hESC Cyto
Thermocycler	1	Eppendorf	Mastercycler	$6,500	$6,500	Main laboratory	hESC RI
Research Modules (researchers)							
Biosafety hood, 4 feet	3	Nu-Aire	NU-425-400	$6,540	$19,620	Main laboratory	hESC Cu
Incubator, double stack	4	Nu-Aire	NU-8700	$8,688	$34,752	Main laboratory	hESC Cu
Inverted phase contrast microscope (w/ camera system)	1	Olympus	CKX41	$9,500	$9,500	Main laboratory	Monitor/c
Dissecting microscope (w/ camera system and hood)	2	Olympus, Envirco	SZX7, LF430	$11,732	$23,464	Main laboratory	Derivatio
Thermocycler	1	Eppendorf	Mastercycler	$6,500	$6,500	Main laboratory	hESC RI
Additional Main Lab Equipment							
Incubator, O2, CO2; embryonic cells	1	Thermo Heraeus Cytoperm	51011660	$17,500	$17,500	Main laboratory	hESC de
Refrigerated cabinet (45 cu. Ft.)	2	VWR	55703-656	$6,994	$13,988	Main laboratory	Reagent
Flow cytometer (with side scatter)	1	Guava	EasyCyte Mini	$59,200	$59,200	Main laboratory	Quantific
Gel documentation	1	UVP	Gel-Doc It	$8,480	$8,480	Main laboratory	hESC Cl
Electroporator	1	Amaxa	Nucleofector II	$11,090	$11,090	Main laboratory	Genetic I
Controlled-rate cell freezer	1	Planer Co.	KRYP-360	$16,000	$16,000	Main laboratory	Stem Ce
Multiple electrode array	1	Multi Channel Sys.	MEA-60 w/ acces.	$60,770	$60,770	Main laboratory	Neurologi
Equipment Room							
Freezer, -80	1	Fisher	13-990-14	$11,870	$11,870	Equipment room	Reagent
Spectrophotometer	1	NanoDrop Tech.	ND-1000	$7,500	$7,500	Equipment room	DNA-RN
Experion microfluidic electrophoresis	1	Bio-Rad	700-7001	$12,750	$12,750	Equipment room	DNA-RN
Liquid nitrogen freezer	1	Custom Biogenic Sys.	V-3000B	$17,024	$17,024	Equipment room	Stem Ce
Existing Shared Resource Facilities							
Electroporator	1	Amaxa	Nucleofector II Multiwell	$41,990	$41,990	Gene Analysis	Genetic I
QRTPCR;Centrifuge and rotor for TLDA system	1	ABI, w centrifuge and rotor for TLDA	7900HT PN435140; Fisher 75-004-367, 75-006-434,75-006-449	$112,904	$112,904	Gene Analysis	DNA-RN
Illumina BeadStation 500X to GX Upgrade; Infinium - Manual; Analysis and Databasing Support	1	Illumina	UG-10-201; WG-15-111	$151,000	$151,000	Gene Analysis	DNA-RN
Delta vision microscope and software	1	Applied Precision	System Quote	$215,000	$215,000	Cell Imaging	hESC Cyto
Isocyte Laser Scanning Fluorimeter	1	Blueshift	20% Share: $150,000 total	$30,000	$30,000	Cell Imaging	hESC Cyto
				TOTAL	$999,775		

VIDEO CONFERENCING EQUIPMENT: Detailed component budget

Item #	Description	Cost
1	TANDBERG 8000 MXP- Dual 50" Plasma with TANDBERG Precision HD Camera (Maintenance Contract Required)	**$39,710.00**
2	TANDBERG 8000 MXP (Domestic On-Site Service)	**$5,868.00**
3	TANDBERG 8000 MXP (On-Site Installation & Training)	**$5,868.00**
4	TANDBERG 8000 MXP (Natural Presenter Package (NPP))	**$1,200.00**
5	TANDBERG Profile 6000 MXP (Multi Site (MS) – Up to 4 total sites)	**$2,400.00**
6	TANDBERG Centric 1700 MXP (HD) With Integrated 20” widescreen LCD Monitor (Maintenance Contract Required)	**$6,350.00**
7	TANDBERG Centric 1700 (Domestic Customer Core Service NOTE: ON-SITE (V01D) = $1,250.00)	**$750.00**
8	TANDBERG Profile Centric 1700 MXP (On-Site Installation & Training)	**$1,299.00**
9	TANDBERG Centric 1700 MXP (Natural Presenter Package (NPP))	**$1,200.00**
10	TANDBERG Gatekeeper; 125 registrations, 25 local network calls and 5 firewall traversal calls	**$7,600.00**
11	TANDBERG Gatekeeper (On-Site Installation & Training)	**$1,875.00**
12	TANDBERG Gatekeeper (On-Site Service)	**$1,600.00**
13	TMS Base Model including 10 licenses and Scheduler	**$2,175.00**
14	TMS Base Model (On-Site Installation & Training)	**$3,500.00**
15	TMS Base Model Core Service	**$750.00**
16	TANDBERG Border Controller - 25 registrations, 5 traversal calls	**$8,800.00**
17	TANDBERG Border Controller (On-Site Installation & Training)	**$2,100.00**
18	TANDBERG Border Controller (On-Site Service)	**$1,750.00**

STEM CELL TECHNIQUES COURSE							
Capital Equipment	Qty.	Vendor	Model #	Price	Total Price	Location	Justificatior
Stem Cell Techniques Course							
Biosafety hood, 6 feet	3	Nu-Aire	NU-425-600	$7,800	$23,400	Training Laboratory	Hands-on training
Incubator, double stack	3	Nu-Aire	NU-8700	$8,688	$26,064	Training Laboratory	Hands-on training
Inverted phase contrast microscope (w/ camera system)	3	Olympus	CKX41	$9,500	$28,500	Training Laboratory	Hands-on training
Dissecting microscope (w/ camera system and hood)	3	Olympus, Envirco	SZX7, LF430	$11,732	$35,196	Training Laboratory	Hands-on training
Fluorescence microscope (w/ camera system)	3	Olympus	IX71	$45,457	$136,371	Training Laboratory	Hands-on training
Flow cytometer (with side scatter)	1	Guava	EasyCyte Mini	$59,200	$59,200	Training Laboratory	Hands-on training
Thermocycler	3	Eppendorf	Mastercycler	$6,500	$19,500	Training Laboratory	Hands-on training
Video Demonstration microscope system	1	Olympus	IX71 and video camera system	$73,000	$73,000	Training Laboratory	Demonstrations
Lecture and Conference Rooms							
Video Conference System	1	IVCi			$95,000	Fishman Auditorium and Building 7 Conference Room	Lectures and sem
Tandberg components: video screens, camera, computer, software							
				TOTAL	$496,231		

CALIFORNIA INSTITUTE FOR REGENERATIVE MEDICINE

Appendix A

Application: CL1-00511-1

Title: COLLABORATIVE LABORATORY AND TRAINING COURSE FOR HUMAN EMBRYONIC STEM CELL RESEARCH AT BURNHAM INSTITUTE FOR MEDICAL RESEARCH

Public Abstract:

We are proposing to expand our "safe haven" human embryonic stem cell laboratory to accommodate the enormous interest in scientific research in this field, and to provide an environment that is conducive to the goals of the CIRM's Strategic Plan. Our collaborative Shared Laboratory will support the research of all of our institution's many stem cell researchers, including the new investigators who have been recently approved for funding under the CIRM's SEED grant program. In addition, we will cooperate will neighboring institutions to minimize overlap in strategic technological areas and maximize the value of CIRM's investment in our scientific community. The scientists in our program will share their special expertise in the areas of human ES cell derivation and molecular analysis.

All aspects of the Shared Laboratory will be directed by the Program Director, a well-established senior stem cell scientist who has experience in laboratory design and management of large groups of researchers. An Oversight Committee, composed of leading scientists, ethicists, and institution management will meet regularly to monitor and oversee the activities of the Laboratory.

We will also offer a series of Basic and Advanced Stem Cell Techniques Courses on behalf of our local scientific community. A Public Education Program will provide non-scientists with the opportunity to have hands-on experience with hESC research. Alumni from the courses will have access to an interactive web-based discussion group, and will meet once a year to share their scientific discoveries and insights. By closely collaborating with other California institutions, we plan to take full advantage of CIRM's investment in stem cell research and speed the translation of stem cell-based therapies to the clinic.

Statement of Benefit to California:

Californians are a large and diverse population that poses unique challenges for the future of medical care. Fortunately, California has a tradition of taking the lead in technology and medical breakthroughs and following through from the first idea to the final product. A major goal for California's supporters of stem cell research is development of stem cell-based products that have medical use, and the mandate for the research community is to provide the best possible fundamental information to help guide clinical applications. We have already laid the groundwork for research that encompasses both federally approved and non-approved human embryonic stem cells (hESC) by establishing a privately funded safe haven stem cell laboratory and founding a non-profit IRB-approved storage facility for excess embryos that have been donated for research. We have created an informational website and generated the largest worldwide public database of molecular information from our analyses of approved and non-approved hESC. We have been offering hands-on comprehensive courses in hESC technologies for three years, and have launched popular programs for scientific and ethical discussions that are regularly attended by hundreds of Californians. We propose to build on this foundation and expand our breadth and depth in stem cell biology through creation of a CIRM-supported collaborative Shared Laboratory and Stem Cell Techniques Course. We have designed this program to maximize benefit to both our own and neighboring institutions, to enhance collaborative interaction and open doors for the next generation of stem cell scientists. The Laboratory and Course will be a magnet for other researchers to contribute their own expertise, which will leverage the power of the California stem cell community. The program will be a springboard to new commercial ventures and will speed the development of clinical applications for stem cells that will benefit all Californians.